Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

This Line Item project will provide safe and secure interim and long-term (50 year design life) storage and handling capability for stabilized nuclear materials from SRS, Rocky Flats Environmental Technology Site (RFETS) and Hanford. Sub-project S-6081 provides construction and startup of an Actinide Packaging and Storage Facility (APSF) for the interim storage of plutonium metal and oxides. APSF will have the capability for truck unloading/loading, material confirmation, shipping, packaging and unpackaging, accountability measurements, safety evaluation, International Atomic Energy Agency (IAEA) inspections, repackaging, waste management, a vault room with automated accessible storage bays, and full support and administration functions. APSF is on the critical path for completing deactivation of several facilities, both at SRS and around the DOE complex.

Sub-project S-W226 K-Area Material Storage (KAMS) will modify K-Area facilities to provide cost-effective interim storage of non-pit plutonium metals and oxides from Rocky Flats. This will facilitate early closure of Rocky Flats (FY2006) and reduce Rocky Flats' Life Cycle Cost.

Project Status in FY 2006:

The construction, checkout and startup of the K-Area Material Storage Facilities and the Actinide Packaging and Storage Facility will be complete and these facilities will be in operation under separate PtC Projects. SR-SF01 K-Area SNF Project covers KAMS operation. SR-NM06 Nuclear Material Storage covers the operation of APSF.

Post-2006 Project Scope:

Not applicable, project completion expected in FY 2006 if necessary funding provided.

Project End State

Interim long-term (50 year design life) storage and handling capability for stabilized SRS, RFETS and Hanford nuclear materials will be available at SRS at the completion of this project in FY2006. The APSF thermal stabilization, repackaging and storage capabilities will allow SRS to comply with DOE-STD-3013-96, Criteria for Preparing and Packaging of Plutonium Metals and Oxides for Long Term Storage. Automation will be used to minimize exposure during vault surveillance and container handling,. Additionally, the bagless transfer operation will minimize exposure during the transfer of SNM from existing containers to containers designed for interim storage. The modular design of APFS can be expanded to accommodate additional nuclear material currently at other DOE sites.

The KAMS sub-project, completed in FY2001, will provide 10-year design life storage facilities for RFETS materials. The materials stored in KAMS will be transferred to APSF on a separate project starting in FY2007 and completed by FY2010.

Cost Baseline Comments:

Standard engineering and design cost-estimating methodologies for capital project were used to develop the estimate for this project prior to its temporary suspension in FY 1999 and 2000 due to very limited funding in those years. Funding support and project remobilization are assumed to resume at the beginning of FY 2001. The cost and schedule impacts of this funding driven delay are conceptual planning quality estimates and do not

Project Description Narratives

include potential impacts of future integration of APSF with the proposed Plutonium Demobilization Complex at SRS. The funding profile assumes the timely approval of the FY 1999 request for reprogramming of $44,000,000 from LI 97D450 Nuclear Material Storage to provide necessary funding in support of key DNFSB 94-1 commitments as well as safety upgrades to SRS Facilities. This action resulted in an estimated 50 months delay in APSF startup and an increase in total project cost. Every year construction of APSF is postponed increases F-Area Stabilization project Life Cycle Cost, APSF Total Project Cost, and the MD Program Pu Immobilization Project cost.

The full cost of PBS work scope may change based on the authorized funding and priorities in any given year due to changes in site overhead assumptions. For planning and budgeting purposes, work scope costs were estimated using site overhead rates sized for clearance at a funding target of $1222.5 million. For FY 2001 (the budget year), the site overhead is applied and cleared at the funding target, while the work scope below the funding target (planning level) is incremental direct cost. For FY 2002 and beyond, the site overhead is applied and cleared over the total planning level of scope.

Safety & Health Hazards:

The Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 94-1 on May 26, 1994. Specifically, the DNFSB expressed safety and health concerns associated with the liquids and solids containing fissile materials trapped in spent fuel storage pools, reactor basins, reprocessing canyons, and various other facilities. Many of these materials are packaged in configurations that are not suitable for long term storage. This is a significant safety concern. If not handled and stored properly, these materials can pose a number of potential hazards including criticality, dispersion of materials causing widespread radioactive contamination and radiation exposure to workers. New state-of-the-art capacity for safely handling, storing and safeguarding these materials, primarily plutonium, after they have been converted to forms suitable for extended storage is a key element of the plan to eliminate these hazards. New thermal stabilization, repackaging and storage capabilities will allow SRS to comply with DOE-STD-3013-96, Criteria for Preparing and Packaging of Plutonium Metals and Oxides for Long Term Storage. This project covers the construction of necessary storage facilities.

Safety & Health Work Performance:

Activities and checkpoints are described by the SRS Integrated Management System and specifically controlled by the SRS Work Control System. The conditions and requirements are clearly established and agreed upon prior to the starting of any project and those requirements are contractually binding upon WSRC. WSRC uses the Integrated Safety Management System (ISMS). The key elements of ISMS are to define the scope of work, identify and analyze hazards associated with the work, develop and implement hazard controls, perform work within controls, and provide feedback on adequacy of controls and continue to improve safety management. The WSRC Integrated Procedures Management System is the primary mechanism for implementing the objective, principles and functions of the Integrated Safety Management System. This system establishes Company-Level, Division-level, and Program-specific procedures consistent with organizational roles, and ensures a consistent, discipline site-wide approach to safety while performing work.

PBS Comments:

Construction of a new Actinide Packaging and Storage Facility (APSF) will be complete by the end of FY2001. This facility will provide the latest technology in treatment and packaging of Plutonium (Pu-239) to meet the DOE STD-3013-96. Special Nuclear Materials from F-Area vaults will be transferred to the APSF for consolidation, materials will be treated / packaged as necessary to meet storage requirements awaiting final disposition as

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

Project Description Narratives

determined by the Department of Energy`s Office of Material Disposition. The repackaging and storage of identified SRS materials will be current with stabilization activities by the end of FY02. Metrics for this project are reported under SRNM-01, F Area Stabilization.

The date and form of final material disposition and storage is currently undecided; therefore, this facility will continue to operate past the year 2006 to provide safe interim storage (monitoring, testing and repackaging) of special nuclear materials and other programmatic materials until the final disposition is determined.

A Record of Decision for the Storage and Disposition of Surplus Weapons Usable Fissile Materials Environmental Impact Statement was issued on January 14,1997 which will reduce the number of sites where plutonium is stored through a combination of storage and disposition alternatives. Stabilized and separated non-pit plutonium from Rocky Flats will be moved to Savannah River after completion of APSF. The Office of Material Disposition (MD) provided funding in FY97 ($9.5M) and reprogramed an additional $8.5 million from MD to EM from Line Item 97-D-140, Plutonium Storage Project (various locations) for use in FY99 for the expansion needed to accommodate the additional Rocky Flats material.

The OMB funding target for the Nuclear Material Stabilization program does not fully support on-schedule implementation of the Phased Canyon Strategy. To satisfy the funding target and minimize overall impact to the material stabilization program, it would be necessary to reduce the FY99 funding to this PBS by $36.6 million and to reinstate the funding in later years. Funding and schedules of other related PBSs would also be affected.

Baseline Validation Narrative:

The APSF Project was validated by the Department of Energy (DOE) on three separate occasions:
a. April 1995 for FY`97
b. April 1996 for FY`98
c. March 1997 for FY`99 and beyond for balance if funding.
d. March 1998 for FY2000 and beyond for balance of funding.
e. This project was validated in accordance with the established requirements in April 1998 by a team comprised of DOE-HQ/SR program, finance, and project personnel.

General PBS Information

Project Validated?	Yes	**Date Validated:**	3/28/1998
Has Headquarters reviewed and approved project?	Yes		
Date Project was Added:	12/1/1997		
Baseline Submission Date:	7/3/1999		
FEDPLAN Project?	Yes		

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

General PBS Information

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	N	Y	N	N	N	Y	Y

Project Identification Information

DOE Project Manager: Charles E. Anderson

DOE Project Manager Phone Number: 803-952-2790

DOE Project Manager Fax Number: 803-952-2495

DOE Project Manager e-mail address: charles.anderson@srs.gov

Is this a High Visibility Project (Y/N): Y

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	465,269	0	465,269	11,913	11,913	22,936	22,936	38,571	17,940	67,443	67,384	66,800	71,800	62,500	37,982
PBS Baseline (constant 1999 dollars)	418,793	0	418,793	11,913	11,913	22,936	22,936	38,571	17,317	62,837	61,132	59,009	61,758	52,345	30,975
PBS EM Baseline (current year dollars)	455,739	0	455,739	2,383	2,383	22,936	22,936	38,571	17,940	67,443	67,384	66,800	71,800	62,500	37,982
PBS EM Baseline (constant 1999 dollars)	409,263	0	409,263	2,383	2,383	22,936	22,936	38,571	17,317	62,837	61,132	59,009	61,758	52,345	30,975

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Savannah River**

Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site**

HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Non-EM Costs included in the Cost Baseline

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Non-EM Category: Other													
Materials Disposition	80												

	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
Non-EM Category: Other													
Materials Disposition													

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	3.60%	3.60%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.10%	2.10%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

Project Reconciliation

Previously Projected End Date of Project: 4/30/2002

Current Projected End Date of Project: 6/30/2006

Explanation of Project Completion Date Difference (if applicable):

Insufficient SRS FY1999 & 2000 funding allocations forced the temporary suspension of LI 97D450 sub-project to construct the Actinide Packaging and Storage Facility (APSF) covered by this project. The project was suspended in January of 1999 and is projected to remobilize in FY 2001. This assumes that FY2001 funding for SRS will not be capped at the Target Level. This suspension extended the life of this project by four years and drove up the cost. In FY 1999 $44M of available funding was reprogrammed to higher priority SRS tasks. FY 2001-2006 site funding limitations will likely cause an additional delay in completing this project and an increase in its lifecycle cost.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	180,765	**Actual 1997 Cost:**	2,383	**Actual 1998 Cost:**	22,936
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	155,446	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			4,197
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	159,643				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):	65,000	Technical Risk Assessment and preventive measures.
Cost Growth Associated with Scope Previously Reported (+):	169,088	Two year demobilization, 4 year increase in schedule, 100% design estimate vs 40%.
Cost Reductions Due to Science & Technology Efficiencies (-):		Nonintrusive technologies for MC&A and material surveillance. Remote repackaging systems.
Subtotal:	393,731	
Additional Amount to Reconcile (+):	-9,787	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**383,944**	

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite

Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Savannah River**

Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site**

HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Complete construction of APSF	SR-NM03		9/30/2001								
SR-NM03 Nuclear Material Storage Project complete.	SR-NM03-099		6/30/2006								
Material Storage Project Start	SR-NM03-001		10/1/1996								
Complete KAMS Phase I construction	SR-NM03-003		1/31/2000								Y
Complete construction of KAMS Phase II	SR-NM03-002		12/31/2000								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Complete construction of APSF	SR-NM03									Y	Not funding this project in FY 2000 delayed construction approximately 50 months. This milestone was replaced with 2227 Project End.
SR-NM03 Nuclear Material Storage Project complete.	SR-NM03-099				Y	Y					Scope of APSF project complete. Project closeout. This project was placed on hold in FY 1999 due to SRS's limited FY 2000 funding. This action resulted in an estimated 3-4 year delay in APSF startup and an increase in total project cost. Project constru
Material Storage Project Start	SR-NM03-001			Y							Initiate Material Storage Project SR-NM03. No SEG
Complete KAMS Phase I construction	SR-NM03-003										Complete the Phase I construction of K-Area Material Storage (KAMS). This phase provides 1,000 storage locations for 9975-type shipping containers in the 105-K building. SEG milestone = NMC03.

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Complete construction of KAMS Phase II	SR-NM03-002										Complete the construction of the Phase II KAMS project. This phase will provide an additional 2,000 storage locations for 9975-type shipping containers. With the completion of Phase II, KAMS will have a total of 3,000 shipping container storage location

Technology Needs

Site Need Code: SR99-6006-S

Site Need Name: Application of Smart Materials to Nuclear Materials and Waste Storage

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: SR99-5013

Site Need Name: APSF Non-Destructive Assay (NDA) Equipment Needs

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0489**

Project **SR-NM03 / Nuclear Material Storage Line Item**

Technology Needs

Site Need Code: SR99-5014

Site Need Name: APSF International Safeguard System Needs

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: SR99-5015

Site Need Name: APSF Plutonium Stabilization & Repackaging System (PuSPS)

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Technology Needs

Site Need Code: SR99-5017

Site Need Name: Impact of Radiolysis Gas on Sealed Storage Containers

Focus Area Work Package ID: Pu-02-Stabilization **Focus Area Work Package:** Miscellanous Pu Residue Stabilization and Disposition

Focus Area: PLUTOFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: SR99-5018

Site Need Name: Gas Generation During Shipping and Storage of Residue Materials

Focus Area Work Package ID: Pu-02-Stabilization **Focus Area Work Package:** Miscellanous Pu Residue Stabilization and Disposition

Focus Area: PLUTOFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: SR99-5024

Site Need Name: Complete Material Identification and Surveillance Studies

Focus Area Work Package ID: Pu-02-Stabilization **Focus Area Work Package:** Miscellanous Pu Residue Stabilization and Disposition

Focus Area: PLUTOFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Project Baseline Summary Report

Data Source: **EM CDB**
Report Number: **GEN-01b**
Operations/Field Office: **Savannah River**
Print Date: **3/9/2000**
Site Summary Level: **Savannah River Site**
HQ ID: **0489**
Project **SR-NM03 / Nuclear Material Storage Line Item**

Technology Needs

Site Need Code: SR99-5025
Site Need Name: Moisture Analysis Methods for Impure Plutonium Materials
Focus Area Work Package ID: Pu-02-Stabilization
Focus Area Work Package: Miscellanous Pu Residue Stabilization and Disposition
Focus Area: PLUTOFA
Agree with Technology Link: Y
Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate